



U.S. ATLAS Computing

- **Goals for the next year**
- **Status of ATLAS computing**
- **U.S. ATLAS**
 - u **Management proposal**
 - u **Brief status of efforts**
 - s **Core software**
 - s **Subsystems**
 - s **Facilities**
 - u **Schedule**
 - u **FY 00 requests**
- **Summary**



Goals for the next year

- **Project organization**
 - u **Management**
 - u **Identify areas of responsibility**
- **Integration of efforts into ATLAS**
- **Inception/development of software**
- **U.S. support facilities**
 - u **Planning/development of infrastructure**
- **Prepare for reviews**



International ATLAS

- **New Computing Coordinator**
 - u **Norman McCubbin (RAL)**
 - s **Available full time November**
 - s **Approval vote - ATLAS CB June 10th**
 - s **Responsibility: Core software**
- **New Physics Coordinator**
 - u **Fabiola Gianotti (CERN)**
 - s **Approval vote - ATLAS CB June 10th**
- **Detector specific sim/reconstruction**
 - u **Organized within subsystems**



Architecture Taskforce

- **Software partitioned into work packages**

- u Katsuya Amako, KEK
- u Laurent Chevalier, CEA
- u Andrea Dell'Acqua, CERN
- u Fabiola Gianotti, CERN
- u Jurgen Knobloch, CERN
- u Norman McCubbin, RAL
- u David Quarrie, LBL
- u R.D. Schaffer, LAL
- u Marjorie Shapiro, LBNL
- u Valerio Vercesi, Pavia



Architecture T.F. Status

- **Two meetings so far**
- **Directions:**
 - u Language: C++ (allow for migration to other e.g. JAVA)
 - u Fortran wrapping in short term
 - u Examine GAUDI (LHCb) architecture
- **Goals for October**
 - u Outline of architecture design
 - u Appointment of Chief Architect
 - u Commission work on prototyping of parts of design
 - u Create use-cases, requirement document
 - u Define packages and relations (package diagram)



Quality Control

- **Recommend software performance specifications, review process**

- u **Makoto Asai, Hiroshima**
- u **Dario Barberis, Genoa**
- u **Martine Bosman, Barcelona**
- u **Bob Jones, CERN**
- u **Jean-Francois LaPorte, CEA**
- u **Helge Meinhard, CERN**
- u **Maya Stavrianakou, CERN**



Action on other Groups

- **Domain Interface Group (DIG) - replaced**
 - u **Architecture group**
- **National Board**
 - u **Supported platforms**
 - u **Regional centers**
- **Training**
 - u **Network of national contacts for training**
 - u **C++, OO programming**
 - u **GEANT 4**
 - u **ATLAS Specific**



U.S. Participation

- Frank Paige - Co- convenor of SUSY working group
- David Malon - Nominated as co-leader of database group
- Ian Hinchliffe - Leader of Event Generator group
- David Quarrie, Marjorie Shapiro - Architecture Task Force
- John Parsons - Co-convenor of Top working group
- Misha Leltchouk - L Ar simulation coordinator
- Michael Shupe - Convenor of Background working group
- Fred Luehring - TRT software coordinator
- Krzys Sliwa - Chair of ATLAS World-wide computing group
- Frank Merritt - Training contact
- Bruce Gibbard - Regional center contact
- John Huth- National Board contact



Management of U.S. Effort

- Draft WBS

- u 2.1 Physics

- s Generators, benchmarks, mock data challenges, physics

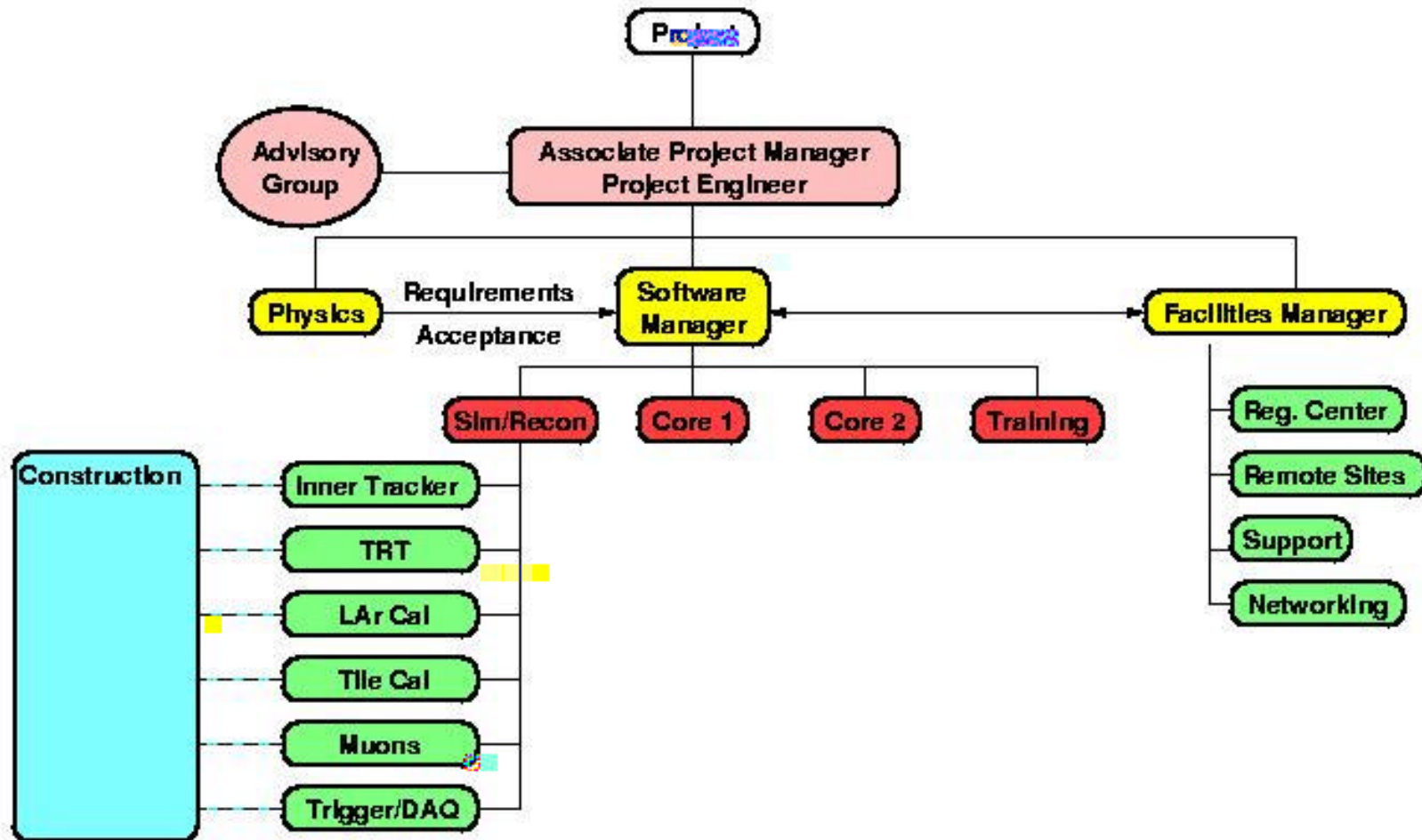


Management Structure

- Reflects flow of deliverables to, from ATLAS
- Appointments (2 year renewable terms)
 - u Physics: Ian Hinchliffe (LBNL)
 - u Facilities: Bruce Gibbard (BNL) + deputy
- Issues
 - u Software manager
 - s Availability within U.S. ATLAS - hire?
 - s Flatter structure for the time being?
 - u Project engineer
 - s Bring on closer to full project definition



Proposed Management





Near Term Activities/Issues

- U.S. ATLAS Web-site
- Weekly video conferences
- Support role of BNL
- Gathering FY 00 requests
- Advisory group appointment
- Writing assignments for proposal
- NSF MRE/IT proposal - Tier 2 centers
- Discussions of deliverables with ATLAS
- Interactions with agencies
 - u JOG, Computing review



Software

- Core Software

u Con



Database

- **David Malon (ANL)**

- u **Tilecal pilot project**

- s **Tilecal testbeam data in object database**
 - s **Testbed for ATLAS technologies and strategies**
 - s **Early feedback to developers**
 - s **Generalized to other subsystems**

- u **Database core software**

- s **Transient and persistent object mapping**
 - s **Definition of database/control interface**
 - s **Specifications**
 - s **Examine alternatives to Objectivity**

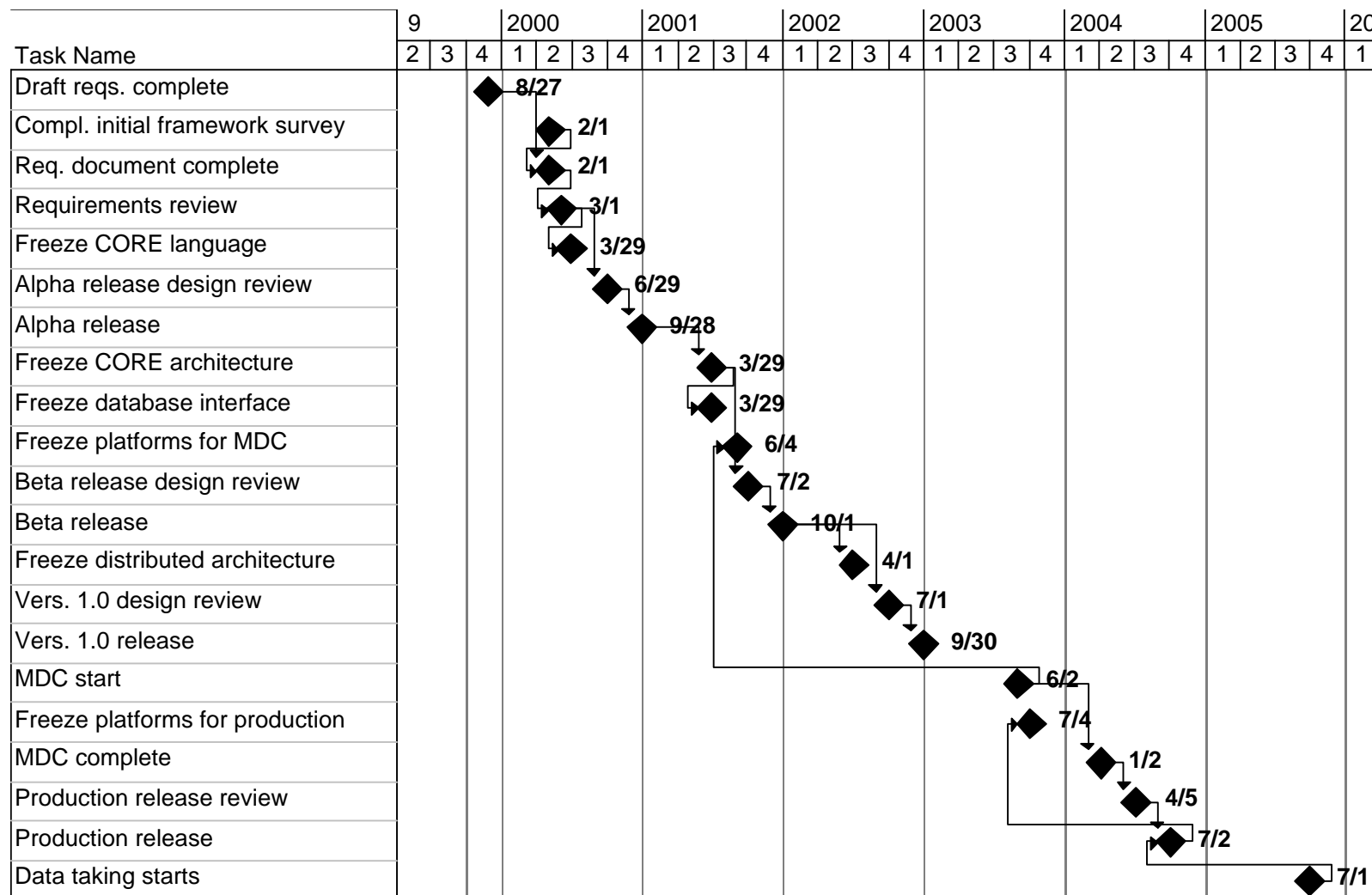


Control/Framework

- **Craig Tull (LBNL)**
 - u Working on requirements document (w/ Hinchliffe, Shapiro, Vacavent)
 - u Market survey of framework systems
 - s **Object component model**
 - s **AC++**
 - u Compatibility with ATLAS architecture
 - u Resource loaded work plan exists
- **Request for support on NOVA (BNL)**

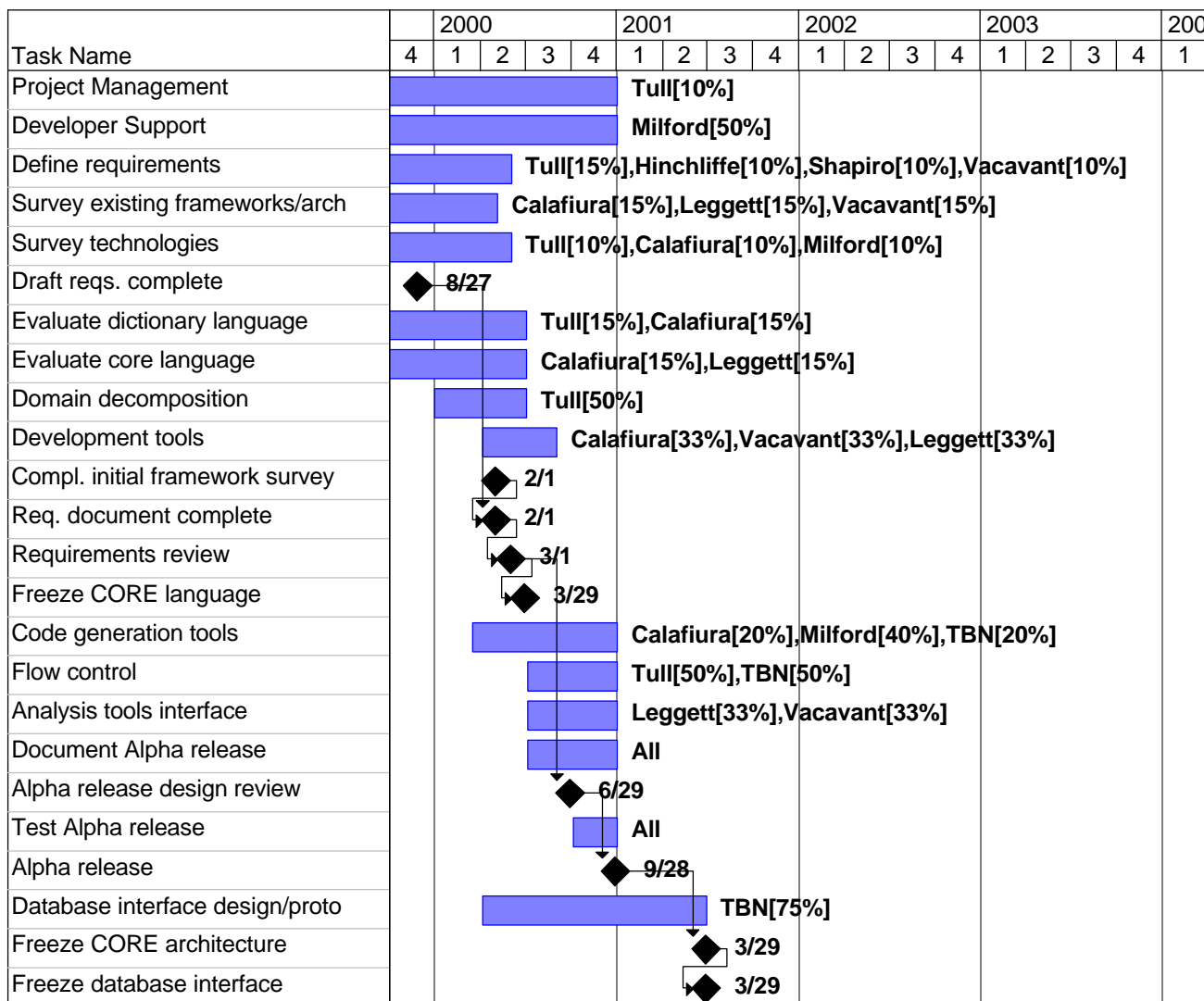


Framework Milestones





Framework Schedule





One Framework Model

Software Bus (eg. CORBA)

Component C++ Classes/Objects

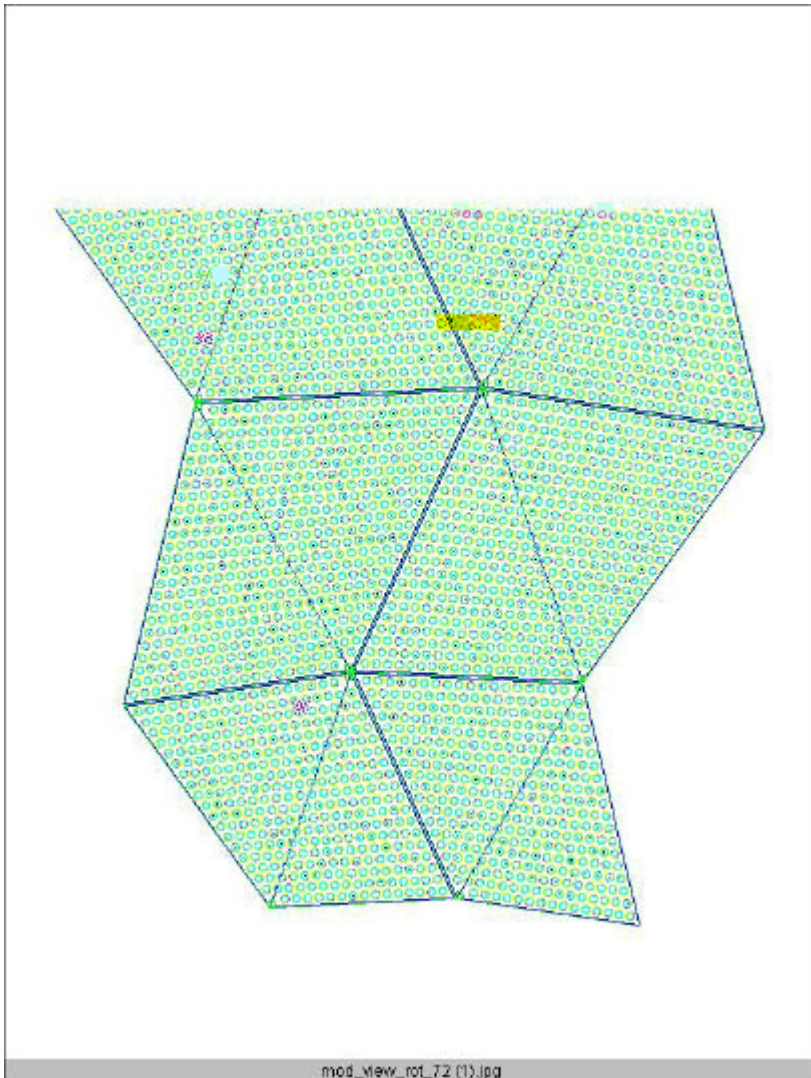


MONARC

- **Models of Networked Architecture at Regional Centers (ATLAS+CMS)**
 - u **Alexander Nazarenko, Tufts hire**
 - u **Tasks:**
 - s **Validate simulation models**
 - s **Perform first simulations of LHC architectures**
 - s **After Dec. '99, focus on planning for regional centers**
 - u **Model validation - end of September**
- **Understanding of U.S. computing facilities**



Some Detector Activities



- **TRT/ID**
 - u Put full TRT simulation into GEANT4
- **L-Ar**
 - u Coil, cryos in GEANT4 (Nevis)
 - u Accordion structure in GEANT4 (BNL)
- **Tilecal**
 - u Pilot project



Some Detector Activities

- **Muon**
 - u Study of noise in Higgs-> 4 muon
 - u Combined performance of ID+muon system (A reconstruction)
 - u CSC into simulation
- **Trigger/DAQ**
 - u Comparison of switching architectures
- **Background studies**
 - u Optimization of shielding (100 MeV muon background)



Training

- **New paradigm of OO programming**
 - u **Training courses (F. Merritt)**
 - s **Course offered at BNL (near future)**
 - s **Course offered at Chicago**
 - u **Successful programs seen at other experiments (CDF, D0, BaBar)**
- **Ongoing need for training throughout course of experiment**
 - u **Documentation**
 - u **ATLAS-specific**



Facilities

- **BNL ramping up support facility**
 - u **Taps into RHIC Computing Facility**
- **Major issue of Tier 1/2 facilities**
 - u **Scale of “Tier 2’s”**
 - s **Size for support staff, infrastructure**
 - s **Computing model for U.S. (e.g. grids)**
 - s **Being addressed in NSF MRE/IT proposal**
- **Need to develop policy on usage, support of platforms at institutions**



FY 00 Funding Requests

- In preparation for presentation to agencies
- Sum of requests received:
 - u Approximately \$4M
 - s 3.2M Personnel (0.8M continuing, 0.1M physicist)
 - s 0.7M Hardware
 - u 24 FTE's (4.2 continuing)
- That's a lot!



Summary of Requests

- **ANL**
 - u 3.5 FTE, Database, Tilecal
- **BNL**
 - u 9.33 FTE, Support, hardware, facilities study, event model, control, GEANT4
- **LBNL**
 - u 3.5 FTE control
- **U. Arizona**
 - u Linux boxes for background studies



Summary of Requests

- **B.U.**
 - u 1 FTE - muon software
- **U.C.**
 - u 2 FTE - tilecal, database, training
- **MSU**
 - u 0.5 FTE - trigger/daq
- **U. Mich.**
 - u 1 FTE - muon, trigger, support



Summary of Requests

- **Nevis**

- u 2 FTE - L-Ar

- **NIU**

- u Hardware - background studies

- **Tufts**

- u 1 FTE - MONARC+facilities studies



Priorities

- **Critical personnel**
 - u People who would otherwise be lost, fulfilling a critical role
- **Core software effort**
 - u Prerequisite to inclusion of sim/recon software
 - u Yet, cannot commit to major ramp (no MOU's)
- **Support of U.S. efforts (facilities)**
- **Critical studies**
- **Transition to OO**



Priorities

- **Coherency in development of plan**
 - u **Matching of facilities scope to usage**
 - s **E.g. database effort, simulations**
 - u **Contiguous/overlapping areas**
 - s **E.g. event model, database, control/framework**



NSF MRE/IT Proposal



- Tier 2 centers
 - u Approx. 5 total
 - u 256 node systems
 - u 100 TB tape system
 - u Low maintenance
- Linked by computing grid
- Computing professionals
 - u Dual role - user/developers



Schedule

- **July**

- u **Propose management structure to E.C., PM**
- u **Collaboration meeting**
- u **Tier 1/2 scoping**
- u **Plans for FY 00 reviewed**
- u **MRE "White paper"**

- **August**

- u **Present FY 00 plans to agencies**
- u **Outline and writing assignments for proposal (Dec.)**



Schedule

- **September**

- u **First drafts of proposal**

- s **Management**

- s **Software: Core and recon/sim**

- s **Facilities**

- s **Training, collaborative tools**

- **October**

- u **Revise proposal, review**

- **November**

- u **Meeting to prepare for Dec. review**



Schedule

- **December**
 - u **Agency review**
- **January**
 - u **Revise funding plan for FY 00**
 - u **Begin work on MOU's**
- **Ongoing - and beyond January**
 - u **Prototyping code**
 - u **Progress toward baselining**
 - u **Filling in management slots**



Summary

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